Appendix: Detailed procedures

Experimental Intervention

Best refractive correction for far and near – addition information

  Refraction will be performed at shorter distance than the typical 5 or 6 meters and we will use retro illuminated charts instead of projector-charts. Retinoscope, loose lenses, hand-held Jackson Cross cylinder lens and trial frame will be used, mandatory subjective refraction and use of trial frame (instead of a phoropter) can also be considered as a special procedure to refract people with low vision.(DeCarlo, McGwin et al. 2013, Wilkinson 2017) For the spherical correction, the most positive lens that gives the best visual acuity will be prescribed. For the astigmatic correction the minus cylinder form will be used and the least negative cylindrical lens consistent with best visual acuity will be used.(Dunbar, Crossland et al. 2012) The procedure will be performed at 4m or at 2m or at 1m and adjusted to infinite according to the distance. For example, for a value of refraction obtained at 2m the final value will be adjusted by 0.5D, that is, if the spherical refraction was +1.5D, it will be adjusted to +1.0D for infinity.

Prescription of magnification for reading – addition information

  Magnification compensates for the loss of visual resolution of the eyes. In our case, magnification will be achieved by decreasing the viewing distance. Short viewing distances require an appropriate optical correction that can be provided as glasses or hand-held magnifiers and this is often referred as relative distance magnification. We focus our intervention on reading because reading is important to people at all ages.(Rubin 2013, Brown, Goldstein et al. 2014)

  Equivalent viewing distance (EVD) is defined as the distance at which the original object would subtend the same angular size as the angular size of the image formed by positive power lens.(Lovie-Kitchin and Whittaker 1999) That is, the EVD gives the theoretical distance at which the participant will be able
to read, and we will use the EVD as a starting point to decide about the power of the magnifier or glasses. Power adjustments, according to participants' preferences, will be performed before the final prescription.


